moriorum, *Ocydromus pygmæus*, *Fulica newtoni*, *F. chathamensis*, *Aphanapteryx hawkinsi*, *Ap.?* spp., *Chenopis sumnerensis*, *Carpophaga chathamica*, *Columba* sp.

HENRY O. FORBES.

Canterbury Museum, April 2.

ADMIRAL MOUCHEZ.

We have already referred to the loss which French science has recently sustained in the sudden death of the director of the Paris Observatory, at the age of 71. It falls to the lot of few sailors in any country to take so large a share in scientific progress as did Admiral Mouchez, or to combine great administrative capacity with thorough knowledge and power of initiation.

His love for astronomy and geodesy first made itself felt when he was at the Collège Louis le Grand. Appointed to the navy in 1843, he was captain of a frigate in 1861, but three years before this he had communicated to the Academy of Sciences observations of the partial eclipse of the sun seen by him at Buenos Ayres on September 7, 1858. He was then in that locality constructing the hydrographical map of the eastern coast of South America. A year or two later he presented to the Academy a map of Paraguay, and he was presented as a candidate for filling the seat vacated by the untimely death of Bravais in 1863. But he was outvoted, and he continued his hydrographical work. He published a description of the coast of Brazil, and he observed an annular eclipse of the sun (on October 30, 1864) at San Catharina, Brazil.

When in 1872 expeditions were being organized by all countries to observe the transit of Venus in 1874, Mouchez was placed in command of the party which was destined for the island of Saint Paul. The climatic conditions of this island—either the winds are very violent, or the heaven is nearly always overcast—did not seem to favour the observers. The head of the expedition had the greatest difficulty in reaching his post, and it was in the middle of a violent storm that he had to approach the large volcano which was to be his station.

The evening of the day before the transit the rain fell in torrents; but the next day, at the moment wished for, by quite a fortunate chance, the storm cleared in consequence of a change of wind, and the veil of mist which covered the sky suddenly vanished; the observation was thus made under most favourable conditions. Mouchez was able to recognize the atmosphere of Venus very distinct from that of the Sun at the moment of contact.

The astronomical expedition which he commanded was composed of naturalists as well as astronomers; it has furnished science with interesting accounts of the geology, zoology, and botany of the islands of St. Paul and Amsterdam its neighbour.

On Mouchez's return to France he was promoted Commander of the Legion of Honour at the same time that he was nominated a member of the Academy of Sciences in the place of the astronomer Mathieu. In October 1875, at the annual public séance of the five academies, he gave an account of his expedition to the island St. Paul.

In 1878 he obtained from the French Admiralty the funds required for establishing at Montsouris, with the same instruments used by him at St. Paul, a school of astronomy for the use of marine officers and masters. This school is in full prosperity, and every year about a dozen men are trained in conducting astronomical and magnetical observations.

When Le Verrier died, on September 13, 1877, Mouchez, then commander, was appointed to the directorship of the National Observatory, and nearly simultaneously with this Commander Mouchez received the rank of Rear Admiral. He was put on the Reserve List in 1880.

Admiral Mouchez showed himself, at the Observatory, an active administrator. He brought about many marked improvements in the different branches of the establishment. He suggested the establishment of a practical school of astronomy, which has been worked for eight years consecutively, and has furnished all the French observatories with a remarkable supply of young astronomers. Thirty have passed through the two years' course.

Admiral Mouchez always encouraged useful researches, and the magnificent work undertaken with so much success by the brothers Henry in celestial photography, and the development of the *equatorial coudé*, under the fostering care of M. Loewy, must be specially mentioned here.

But by far the most important result of this kind which we owe to the Admiral's clear foresight and power of dealing with men is to be found in the Chart of the Heavens, which will remain as one of the memorable works of the science of the nineteenth century. It was on the proposal of the director of the observatory that the Academy of Sciences convoked foreign astronomers to take part in the Congress which, on three different occasions, assembled with so much success at the Paris Observatory.

This vast undertaking would have been impossible without the genius of the French nation and without such a man as Mouchez. It is essentially an international work which England should have started, but alas! in such matters our science is scarcely national; it is parochial, and so it must remain until the relations between science and the Government are changed.

Admiral Mouchez was a very zealous promoter of colonial observatories. He travelled to Algiers in order to preside over the inauguration of the large establishment erected by M. Trépied. This very year, having travelled to Tunis to recruit his failing health, he had taken steps for creating an astronomical station in the town of Zaghouan, and he was advocating the building of observatories at Tahiti and Tananarivo at the time of his death.

There are few astronomers who will not feel the death of Admiral Mouchez as the loss of a dear friend, and one in whom loyalty, honesty, and simplicity of character were so blended that the great services rendered by the savant were almost forgotten in the esteem felt for the man.

NOTES.

M. Heckel, the President of the Botanical Section of the French Association for the Advancement of Science, proposes, as special subjects for discussion at the approaching meeting of the Association, to be held at Pau, the flora of the Alps and of the Pyrenees, and a comparison between them; and the best means of arranging and preserving botanical collections.

Prof. T. H. Huxley has been elected President, and Sir Henry Roscoe and the Master of University College, Oxford, two of the Vice-Presidents, of the Association for Promoting a Teaching University for London. Motions on the whole favourable to the plans of the Association have been carried by the Senate of the University of London and the Council of University College.

Prof. Ramsay, in his report as Dean of the Faculty of Science in University College, London, has to record many changes during the past session. Reference is, of course, made to the retirement of Prof. Croom Robertson from the Chair of Philosophy, and to the appointment of Dr. James Sully as his successor. Prof. Ramsay's predecessor as Dean, Prof. Lankester, expressed to him his regret that he had not taken steps to ascertain the number of original investigations carried out during the time of his Deanship; and it occurred to Prof. Ramsay that no more fitting task could devolve on the Dean than to chronicle how far the progress of science is due to those, students and teachers, who work in University College. His colleagues have responded to his inquiries, and he has thus been able to lay before the Council a list of publications amounting in all to 84 separate memoirs or books. They contain accounts of researches in which professors, assistants, students, former students who are still at work in the College have taken part; and Prof. Ramsay maintains that in this, as well as in the routine of teaching, the College fulfils the duties of a true University. The record, he contends, equals, if it does not surpass, that of any University in the kingdom.

SINCE Saturday last Mount Etna has been in a state of eruption, and many severe shocks of earthquake have been felt in the surrounding country. From midnight till six o'clock on Saturday evening there were eleven distinct shocks. About noon on Saturday a great fissure opened on the summit of the mountain, from which lava began to issue with great rapidity. During the following night the eruption assumed alarming proportions, and huge quantities of lava streamed down the sides of the mountain. This rapidly flowed in two streams—one going in the direction of Nicolosi and the other towards Belpasso. There was a severe earthquake shock in the immediate vicinity of the volcano on Saturday night. On Sunday the people of Nicolosi assembled for mass outside the cathedral, and remained kneeling in the open air, being afraid to enter owing to the continued shocks of earthquake. At five o'clock in the evening the shocks continued, and very loud subterranean rumblings were heard, giving the impression of a terrible storm. Twelve houses and a portion of a church were destroyed. The eruption continued very active. On Monday it was stated that the rumblings had grown less frequent, and there were indications that the eruptions from the newly-formed fissure were about to cease. The principal crater, however, showed signs of renewed activity. On Tuesday the following telegram was despatched from Catania through Reuter's agency:—"The eruption of Mount Etna is again rapidly increasing in volume and intensity. Five craters at different points on the mountain are showing great activity. Loud explosions occur continually, and this morning there was a strong shock of earthquake. Giarre, on the coast to the north of Catania, has been reduced to ruins, and the whole country round has suffered severely, A number of engineers who have been sent to the points immediately threatened express fears that the wells will blow up on contact with the lava. There is no panic, and in the circumstances the people maintain a fairly calm demeanour."

A TERRIBLE disaster has happened in the neighbourhood of the sulphur springs of St. Gervais, a little way off the road from Geneva to Chamonix. According to a Reuter's telegram, despatched from Bonneville, Haute Savoie, on July 12, the calamity was due to the fact that the lower end of the glacier of Bionnay became detached from Mont Blanc and fell into the torrent beneath. It carried away with it the little village of the same name. The masses of ice and the wreck of the village formed a dam which held up the waters for some time, until they suddenly broke through the obstruction and burst like a cataract into the mountain stream, known as the Bon Nant, which flows by St. Gervais les Bains. These thermal springs, the medicinal virtues of which attract many visitors to the hotel during the year, rise in the wooded ravine of Montjoie, through which the Bon Nant or "Good Stream" passes on its way down to meet the river Arve. The gorge in which the Etablissement des Bains, erected at an altitude of 2066 feet above the level of the sea, stands, or rather stood, is narrow, and the hotel consisted of five separate buildings joined together by walls of stone roughly hewn from the mountain side. At a quarter past two on Tuesday morning or thereabouts, the people in the hotel were awakened by a terrific noise of rushing water, and the crashing of rocks one against the other. Then a furious gust of wind drove through the gorge. The next moment a torrent of water, carrying with it fragments of rock, trees, and débris of all descriptions, hurled itself upon the hotel. Of the five buildings, three were utterly destroyed, another was nearly so, while the fifth remained almost unhurt, owing its safety to its position, which was high above the course of the Bon Nant. Passing down the valley, the torrent struck the village of Le Fayet, which was almost entirely demolished. The wreckage of the houses was swept down the stream for miles into the river Arve, on the surface of which corpses and débris of all kinds were seen floating all day on Tuesday. According to the latest calculations on Tuesday evening, there were no fewer than 200 victims, more than half of whom were staying at the bathing establishment of St. Gervais.

THE following are among the Civil List pensions granted during the year ended June 20:—to Mrs. Caroline Emma Carpenter, £100, in consideration of the services rendered by her late husband, Dr. Philip Herbert Carpenter, F.R.S., to science, and of the sad circumstances in which she was left by his death; to Mr. Thomas Woodhouse Levin, £50, in consideration of the services he has rendered to education and philosophy and mental science, of his blindness, and of his inadequate means of support; to Dr. George Gore, F.R.S., £150, in consideration of his services to chemical and physical science; to Mr. Henry Dunning Macleod, M.A., £100, in consideration of his labours as a writer upon economical subjects; to Mr. Henry Bradley, £150, in consideration of his labours in connection with the "New English Dictionary"; to Miss Letitia Marian Cole, £30, Miss Henrietta Lindsay Cole, £30, and Miss Rose Owen Cole, £30, in recognition of the services rendered by the late Sir Henry Cole to the cause of artistic and scientific education; and to Mrs. Jeanie Gwynne Bettany, £50, in consideration of the services rendered to the spread of scientific knowledge by the numerous writings of her husband, the late Mr. G. T. Bettany, M.A.

MR. THOMAS HANBURY has presented to the Botanical Institute at Genoa the very rich collection of vascular plants made by the late Prof. Willkomm, of Prague. It comprises as many as 14,472 species, the greater number being European or from the adjacent districts of Asia and Africa. It is especially rich in plants of the Spanish Peninsula, and includes most of Willkomm's original type-specimens.

THE Society of Natural History of St. Petersburg has despatched Dr. K. N. Denkenbach on a mission to explore the flora of the Black Sea.

THE death is announced of Prof. Giovanni Flechia, Vice-President of the Reale Accademia delle Scienze of Turin.

THE series of fifteen water-colour paintings of the volcanic district in New Zealand, which were lent by Miss Constance F. Gordon Cumming to the Indian and Colonial Exhibition, are now lent to "The Castle" at Nottingham, where they will be shown for some little time. They were in the Indian and Colonial Exhibition at the time of the great eruption of Mount Tarawera, which destroyed the beautiful Terraces.

THE weather during the past week has been changeable, with frequent rain, more particularly in the north and west; 1·7 inch was measured on the west coast of Ireland on the morning of the 12th instant. At the time of our last issue a deep depression lay over the north of Scotland, the barometer being below 29 inches, while a moderate westerly gale was blowing in the

Channel, with a high sea; and other depressions have subsequently travelled to the northward of our islands. The weather, however, remained fair, but cloudy, in the southern parts of the kingdom, and fog prevailed on the north-east coast on Monday. The distribution of barometrical pressure has, for the most part, been favourable to westerly winds, the high barometer being situated over the north of France. A change, however, set in on Monday, accompanied by strong easterly winds and a falling barometer, the highest readings having shifted northward, with their centre situated to the eastward of our islands. These conditions were followed by fresh disturbances, accompanied by rainy and unsettled weather. Temperature has been lower than of late, although but little below the average; the highest day readings have seldom reached 70°. The *Weekly Weather Report* issued on the 9th showed that, for that week, bright sunshine continued fairly prevalent over the eastern and southern districts, and that there was a considerable excess of rainfall in Ireland and the northern and western parts of Scotland.

THE United States Weather Bureau has just published Bulletin No. 1, containing some interesting notes on the climate and meteorology of Death Valley, California. This valley lies between lats. 35° 40′ and 36° 35′ N. and longs. 116° 15′ and 117° 5′ W., and owes its name to the fate of a party of immigrants, who, about 1850, perished from thirst. The principal feature of interest about the place is that, although situated about 200 miles from the sea, it is said to lie 100 feet or more below the sea level, as determined from barometrical observations. The observations now published were commenced by the Geological Survey and the Signal Service, and were continued by the Weather Bureau during five months from May to September, 1891, and we believe these are the only regular observations, with trustworthy instruments, that have been made there. The principal meteorological features are the excessive heat and dryness; the temperature rises occasionally to 122° in the shade, and rarely falls during the hot season below 70°. It is said that the thermometer has sometimes reached 130°, and once even 137°. The diurnal range of the barometer is characteristic of the form found in continental valleys, being of the purest single maximum type, and has the largest amplitude known. The rainfall was extremely light, and was always either a slight sprinkle or a thunderstorm. The total fall for the five months was only 1·4 inches. It showed a distinct diurnal frequency; nearly all the hours of rain being during the night. Sand storms were also observed on several occasions.

THE Deutsche Seewarte has just issued Part IV. of their meteorological observations made at distant stations. The observations are made three times daily, and monthly means are added in the form agreed upon for international meteorological publications. These observations are especially valuable both on account of the remoteness of the places and of the details which are given about the stations and the instruments used. This volume contains observations made (1) at six stations in Labrador for 1887; (2) at Walfisch Bay for 1889; (3) in the Cameroon estuary, from April 1889 to June 1890; (4) at Bismarckburg, Togoland, West Africa, from June 1889 to May 1890; (5) at Chemulpo, Korea, from July 1888 to December 1889; (6) at Mohammera, mouth of the Euphrates, from June to August 1885; and (7) at Bushire, from September 1885 to March 1886. In some cases the introductory text contains general remarks relating to the tides and prominent features of the climate.

IN February 1888, Dr. E. Etienne was sent to Banana by the Congo Free State to direct the sanitary service, and he made regular meteorological observations there, six times daily from December 1, 1889, to May 16, 1891, which have now been published by the State. The range of temperature during the year 1890 presented great regularity, the absolute maximum, 93°·6, occurred in March, and the minimum, 61°·9, in July; the lowest maximum was 73°·9 in July, and the highest minimum, 79°·2, in April. The greatest monthly variability (the difference of the monthly mean from one month to another) was 5°·0 between May and June. The winds are very uniform: a land breeze from south-east to south at sunrise, then calm till about 11h. a.m.; a sea-breeze from south-west till about 7h. p.m., and a second calm about 10h. p.m. The rainy season of 1889–90 numbered fifty days, with a mean daily fall of 0·49 inch. The most remarkable fall was 1·2 inch in 45 minutes. The rainy season of 1890–91 differed considerably from the former; the number of wet days was only 29, with a mean daily fall of 0·52 inch, the total amount being about five-eighths of that in the previous year. In addition to the above there is a very small amount of rain in the dry season.

THAT iron is always present in small quantities in chlorophyll has been asserted over and over again in botanical text-books. Dr. H. Molisch, who has recently investigated the subject of the presence of iron in plants, disputes this, and asserts that he has never found a trace of iron in the ash of chlorophyll. He states that iron occurs in plants in two forms—in that of ordinary iron-salts, and in the "masked" condition, in which it is so closely combined with organic substances that the ordinary reagents fail to detect it. In this form iron occurs both in the cell-wall and in the cell-contents, but it does not enter into living protoplasm.

IN one of the alcoves of the Museum of the Academy of Natural Sciences, Philadelphia, there are various fossil bones of extinct animals belonging to the Pleistocene period, and along with them a human bone. These "finds" were presented to the Academy in 1846 by Dr. Dickeson, who discovered them in a single deposit at the foot of the bluff in the vicinity of Natchez, Mississippi. Specimens—one from the human bone, the other from one of the bones of a Mylodon—have been submitted for analysis to Prof. F. W. Clarke, chemist of the U.S. Geological Survey; and the result is reported by Dr. Thomas Wilson, of the Smithsonian Institution, in the current number of the *American Naturalist*. The human bone is in a higher state of fossilization than the Mylodon. It has less lime and more silica. In their other chemical constituents they are without any great difference. Of lime the bone of the Mylodon has 30·48 per cent., while that of man has but 25·88 per cent. Of silica the Mylodon has 3·71 per cent., while man has 22·59 per cent. Dr. Wilson refers to the ordinary uncertainty of this test when applied to specimens from different localities and subjected to different conditions, but points out that in the present case no such differences exist. The bones were all encased in the same stratum of blue clay, and were subjected practically to the same conditions and surroundings.

MR. A. J. COOK, of the Agricultural College, Michigan, has been making experiments to determine how much honey is needed to enable bees to secrete one pound of wax, and he has found that the amount is eleven pounds of honey. This is less than the amount given by Huber, and more than that stated by Viallon and Hasty. An account of the experiments and of many other interesting facts relating to apiculture will be found in a report included in Bulletin 26 of the U.S. Department of Agriculture.

AN interesting memoir of John Hancock, with portrait, opens the latest instalment (vol. xi. Part 1) of the Natural History Transactions of Northumberland, Durham, and Newcastleupon-Tyne. The writer, Dr. Embleton, gives an excellent account of Hancock's masterly power of mounting animals. He notes also Hancock's remarkably intimate knowledge of the characters and habits of birds. "He could describe and imitate their motions and sounds so vividly, by feature, voice, and posture, as to be most instructive and at the same time amusing, whilst he convinced his auditors of the naturalness of his pantomime."

A PAPER on the Tertiary Rhynchophora of North America, by Mr. Samuel H. Scudder, has been reprinted from the Proceedings of the Boston Society of Natural History (Vol. 25). The assortment of the mass of Tertiary insects from American western deposits, upon which Mr. Scudder has been engaged for many years, has brought to light an unexpectedly large number of Rhynchophora, about eight hundred and fifty specimens having passed through Mr. Scudder's hands; of these, however, fully a hundred have proved too imperfect for present use or until other specimens in better condition may show what they are. Seven hundred and fifty-three specimens have served as the basis of a Monograph now being printed. More than half (431) of these specimens come from the single locality of Florissant, Colo., and excepting a single specimen from Fossil, Wyo., and another from Scarboro', Ontario, the others are divided between three localities not widely removed: the crest of the Roan Mountains in western Colorado, the buttes on either side of the lower White River near the Colorado-Utah boundary, and the immediate vicinity of Green River City, Wyoming. One hundred and ninety-three species are determined, divided among ninety-five genera, thirty-six tribes or sub-families, and six families, by which it will be seen at once that the fauna is a very varied one. It is richer than that of Europe, where there have been described (or merely indicated) only one hundred and fifty species, of which nine come from the Pleistocene. The older Tertiary rocks of America, therefore, are found to have already yielded nearly twenty-eight per cent. more forms than the corresponding European rocks. Although it is evident to any student of fossil insects that even in Tertiary deposits we possess but a mere fragment of the vast host which must have been entombed in the rocks, Mr. Scudder contends that we have already discovered such a variety and abundance of forms as to make it clear that there has been but little important change in the insect fauna of the world since the beginning of the Tertiary epoch.

IN a paper on artesian water in New South Wales, printed in the current number of the Journal and Proceedings of the Royal Society of that colony, Prof. Edgeworth David says that water rises to the surface in many parts of the east-central portions of Australia from mud or mound springs. These occur chiefly in strata of Cretaceous age. The most remarkable groups are perhaps those on the Lower Flinders, which have been described by Mr. E. Palmer in the Proceedings of the Royal Society of Queensland. The springs erupt thin mud and hot water intermittently, and thus gradually build up around their orifices mounds of mud of a rudely crateriform shape. At Mount Browne, on the Lower Flinders, several feet above the general level of the plain, is a mud spring mound covered with gigantic tea-trees (*Melaleuca leucodendron*), among the matted roots of which the hot water steams in clear shining crystal pools. At the top of the mound is a large basin of hot water, stated to be fathomless. The roots and branches of the tea-trees lying in this water become coated with a soft green vegetable substance, with air bubbles clinging to them. Innumerable small bubbles of carbon-dioxide are continually rising to the surface of the basin. The water is too hot for the hand to bear for any length of time, but when cooled it is good for use and always bright and clear, and free from any taste, while that in the adjoining cold springs is extremely disagreeable. The temperature of the water in two of these hot springs at Mount Browne is 120° F. No change has been observed in the hot springs as regards level or temperature since 1865, when a cattle station was settled there.

AMONG the curiosities in the mines and mining building at the Chicago Exhibition will be a solid gold brick, weighing 500 pounds, and worth 150,000 dollars. It will be exhibited by a mine owner at Helena, Mon.

DR. C. F. MACDONALD, who has been present at the seven executions by electricity in New York State, has submitted to the State authorities a report, in which he contends that experience has thoroughly justified the abolition of hanging. When the new method is used, death, he maintains, occurs before any sensation of pain or shock can be conveyed to the brain of the condemned. Dr. MacDonald's conclusions are endorsed by a hundred physicians who have acted as witnesses at different executions.

THE raisin industry is being gradually developed in Victoria, and promises shortly to be sufficient to supply the requirements of the colony. So says Mr. J. Knight, who writes on the subject in the new Bulletin of the Victoria Department of Agriculture. Extensive planting, he says, is going on in various parts of the colony, from the extreme west at Mildura along to the east as far as Wangaratta, the largest plantation being in the well-known Goulburn Valley. In this locality not only has the manufacture of raisins received attention during the last six years, but the products of the currant vine also are now being placed on the market.

THE second volume of the *Photographic Annual* has been issued. It includes a vast number of advertisements, but contains also some able articles, among which we may especially note Mr. Albert Taylor's general view of the progress of astronomical photography during 1891.

IN 1891 wide-spread alarm was caused in America by the presence of several species of destructive locusts in different parts of the country, particularly in the Western States. A general summary of these incursions was given in Mr. C. V. Riley's annual report for 1891, and now a Bulletin has been issued by the U S. Department of Agriculture giving the detailed reports of the agents who carefully examined the invaded districts.

A CATALOGUE of the marine shells of Australia and Tasmania, compiled by John Brazier, F.L.S., is being printed by order of the trustees of the Australian Museum, Sydney. The first part, dealing with Cephalopoda, has been issued. The task cannot be accomplished very quickly, as it entails the examination of many thousands of specimens, both dry and in spirits. The catalogue will include not only the species represented in the general Museum collection, but also those in the Hargreave's collection presented to the trustees by the late Mr. Thomas Walker, and those recently purchased from Mr. Brazier.

MR. R. ETHERIDGE, JUN., gives, in the latest instalment of the Transactions of the Royal Society of Victoria, an interesting account of a fine specimen of an unusually large species of the genus Belonostomus, obtained in 1889 by Mr. George Sweet, of Brunswick, Melbourne, in the Rolling Downs formation (Cretaceous) of Central Queensland. The fossil exhibits a long, slender fish, with deep, narrow ganoid scales and feeble fins, bent upon itself at about the middle point, and wanting the greater part of the head. Species that are apparently allied have been recorded from the Upper Cretaceous of Western Europe, India, and Brazil, and Mr. Etheridge notes that the present discovery is of great interest as extending still further the ascertained geographical range of the genus during Cretaceous times.

THE very extensive alterations in botanical nomenclature proposed in Kuntze's "Revisio Generum" has prompted a proposal, emanating from the four eminent German botanists, Ascherson, Engler, Schumann, and Urban, with the assent of a number of their colleagues, for a revision of De Candolle's "Lois de Nomenclature Botanique." The essential points of the propositions are that the starting-point for the priority of genera, as well as of species, shall be the year 1753, the date of the publication of Linnæus's "Species Plantarum"; that "nomina nuda" and "semi-nuda," *i.e.* names without a diagnosis, or with only a very imperfect diagnosis, shall be rejected, as well as figures without a diagnosis; that no generic name shall be rejected because of its similarity to another generic name, even if it differ only in the last syllable, but that, if the difference be in spelling only, the later name must be rejected; that the names of certain large and universally known genera be retained, even though they would have to be rejected by the strict rules of priority. English botanists are invited to signify their assent or otherwise to these propositions.

AT the meeting of the Linnean Society of New South Wales, on May 25, Mr. Pedley exhibited a very fine and perfect saw, about 5 feet long, of the saw-fish *Pristis zysron*, Bleeker. The fish, without the saw, was about 19 feet long, and was captured in a net at Evans River, N.S.W. The number of pairs of rostral teeth for this species is usually given as from 26–32; the specimen exhibited had only 25 pairs, all in place. At the same meeting, Mr. Hedley exhibited, on behalf of Mr. Rainbow, a spider of the family *Epëiridæ*. This rare and remarkable insect furnishes an addition to the fauna of Australia, and it is supposed that a new genus may be required for its reception.

MR. W. A. ROGERS, writing to *Science* from Colby University, Waterville, Me., confirms testimony given by Mr. Kunz as to the fact that the hardness of diamonds is not perceptibly reduced by cutting and polishing. In the earlier years of Mr. Rogers's experience in ruling upon glass he was accustomed to select a gem with a smoothly-glazed surface, and, the stone being split in a cleavage plane inclined at a rather sharp angle to the natural face selected, this split face was ground and polished. In this way he was able to obtain at several points short knife-edges, which gave superb results in ruling. It was soon found, however, that after ruling several thousand rather heavy lines the diamond was liable to lose its sharp cutting-edge, and this experience became so frequent that he was compelled to resort to the method now employed, that of grinding and polishing both faces to a knife-edge. He has one ruling diamond prepared in this way, which has been in constant use for four years, and its capacity for good work has not yet been reduced in the slightest degree. A diamond prepared by Mr. Max Levy, of Philadelphia, has given even better results, and so far it shows no evidence of wear.

THE *Bulletin de la Société des Naturalistes de Moscou* (1891, Nos. 2 and 3) contains a very interesting paper, in French, by Prof. A. Pavloff and Mr. G. W. Lamplugh, on the Speeton clays and their equivalents. These clays, which have long occupied the attention of geologists, have acquired of late a new interest owing to close resemblance between their fauna and that of similar deposits in other countries, even as far distant as Russia. The work consists of three parts: the first part, devoted to the description of the Speeton clays and their Lincolnshire equivalents, has been written by Mr. Lamplugh, and will, no doubt, be published in English as well. The second part, by Prof. Pavloff, is devoted to the description of the Cephalopods found in these clays, the Speeton forms being compared with those of other countries, and especially those of Russia. A table giving the succession of the subdivisions of the Jurassic and Cretaceous deposits, with their leading fossils, in the two Russian localities where they are best represented (Moscow and the lower Volga), is given by the author, and it differs from a previous table by the introduction of a new series, named Petchorian, which, although it has the thickness of but a few inches, has nevertheless a very peculiar fauna, of a well-determined character. However, for the present it is not possible to classify it either under the Jurassic or the Cretaceous formation. The table is followed by a detailed description of twenty-five species of Belemnites, of which eight are new, the chief interest of this description being in the attempt to give in each case the genealogical relations of closely allied species, and in a special chapter devoted to the geological history of Belemnites generally and the descent of various species supposed to have originated from the *Belemnites tripartitus* of the middle Jurassic and Lias epoch. In a subsequent paper, which will contain the third part of the work—namely, a comparison of the Speeton clays with those of other localities—the author proposes to describe in the same way the Speeton Ammonites, which are even more interesting than the Belemnites; and he hopes to be able then to give a more positive answer as to where the separation must be taken between the Jurassic and the Cretaceous deposits of the Speeton clays and analogous deposits.

MR. MATTHIAS DUNN writes to us from Mevagissey, Cornwall, that the fishing-boat *Mispah* landed a large shark there lately which had got entangled in her mackerel nets. Its length was 11 feet 2 inches, and in its stomach were two considerable-sized congers. The creature proved to be Couch's Ponbeagle Shark, or *Lamna cornubica* of Cuvier.

THE additions to the Zoological Society's Gardens during the past week include a Tiger (*Felis tigris* ♂ jr.) from Amoy, China, presented by Mr. Robert Bruce; two Mountain Ka-kas (*Nestor notabilis*) from New Zealand, presented by the Earl of Onslow, K.C.M.G.; a Chilian Sea Eagle (*Geranoaetus melanoleucus*) from Chili, presented by Mr. Edward Jewell; a Broad-fronted Crocodile (*Crocodilus frontatus*) from West Africa, presented by Mr. G. T. Carter; a Common Boa (*Boa constrictor*) from South America, presented by Mr. A. E. Oakes; a Macaque Monkey (*Macacus cynomolgus* ♀) from India; a Kinkajou (*Cercoleptes caudivolvulus*) from Demerara, deposited; a Hippopotamus (*Hippopotamus amphibius* ♂) bred in Antwerp; sixteen Common Boas (*Boa constrictor*) from South America, purchased; an Indian Muntjac (*Cervulus muntjac* ♂) born in the Gardens.

OUR ASTRONOMICAL COLUMN.

LUNAR PHOTOGRAPHY.—Dr. L. Weinek, of the Prague Observatory, has been the recipient of several photographs of the moon from Prof. Holden for the purpose of making enlargements from them. The photographs were obtained with the large equatorial of the Observatory at Mount Hamilton, and an illustration of one of the enlargements is given in *L'Astronomie* for July. The photograph is of the large crater Petavius, 153 kilometres in length. With M. Weinek's apparatus the photograph was enlarged twenty times, giving a lunar image of nearly three metres in diameter. At first sight the photograph looks as if the enlargement had been carried a little too far, but when held at arm's length the effect is very fine. The most striking features noticeable are the narrow river-like lines, which are numerous and very alike in appearance. Whether these are really photographic or not of course we cannot say, as we have not seen the original negatives, but they seem to be rather too